University of Nevada, Las Vegas Transmutation Research Program

Anthony E. Hechanova
Director

http://aaa.nevada.edu

Transmutation
Research
Program

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UNIVERSITY OF NEVADA LAS VEGAS

Outline

- Overview of UNLV Program
- FY01 and FY02 in Review
- Plans for FY03
- Future Outlook – Directions

UNLV Transmutation Research Program

Program Mission:

To establish a world-class program at UNLV for transmutation research and education through faculty-supervised graduate student projects.

Program Goals:

- Build core competencies and facilities to promote UNLV's strategic growth
- Increase UNLV's research activities
- Attract students and faculty of the highest caliber

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Organizational Chart

UNLV Administration
President, Provost
Vice Provost for Research

TRP Program Office
Director and Finance Officer (HRC)
Deputy Directors and Program Coordinators

Committees
Finance, Infrastructure
Conferences, Information

Faculty-Supervised Projects
Principal Investigators
Graduate Students

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Program Components

- Student Research
  - 16 Projects, 30 Graduate Assistants, 33 Faculty
  - $3.3 million in FY01 and FY02 grants to departments
- Program Management
  - Proposal solicitation, review, and grant set-up
  - Seminars, workshops, and conferences
  - Recruiting
  - Advisory committees
  - Collaboration coordination
  - Stakeholder involvement
  - Record-keeping and reporting

Program Components: Infrastructure

- New Faculty and Staff
  - Dr. Roy (ME)
  - Dr. Fairhurst (Geo)
  - Dr. Ma (HRC)

- Facilities Enhancement
  - Electron Microscopy and Imaging Laboratory
  - Transmission Electron Microscopy Laboratory
  - Lead Bismuth Eutectic Facilities (three)
  - ICP – Atomic Emission Spectroscopy

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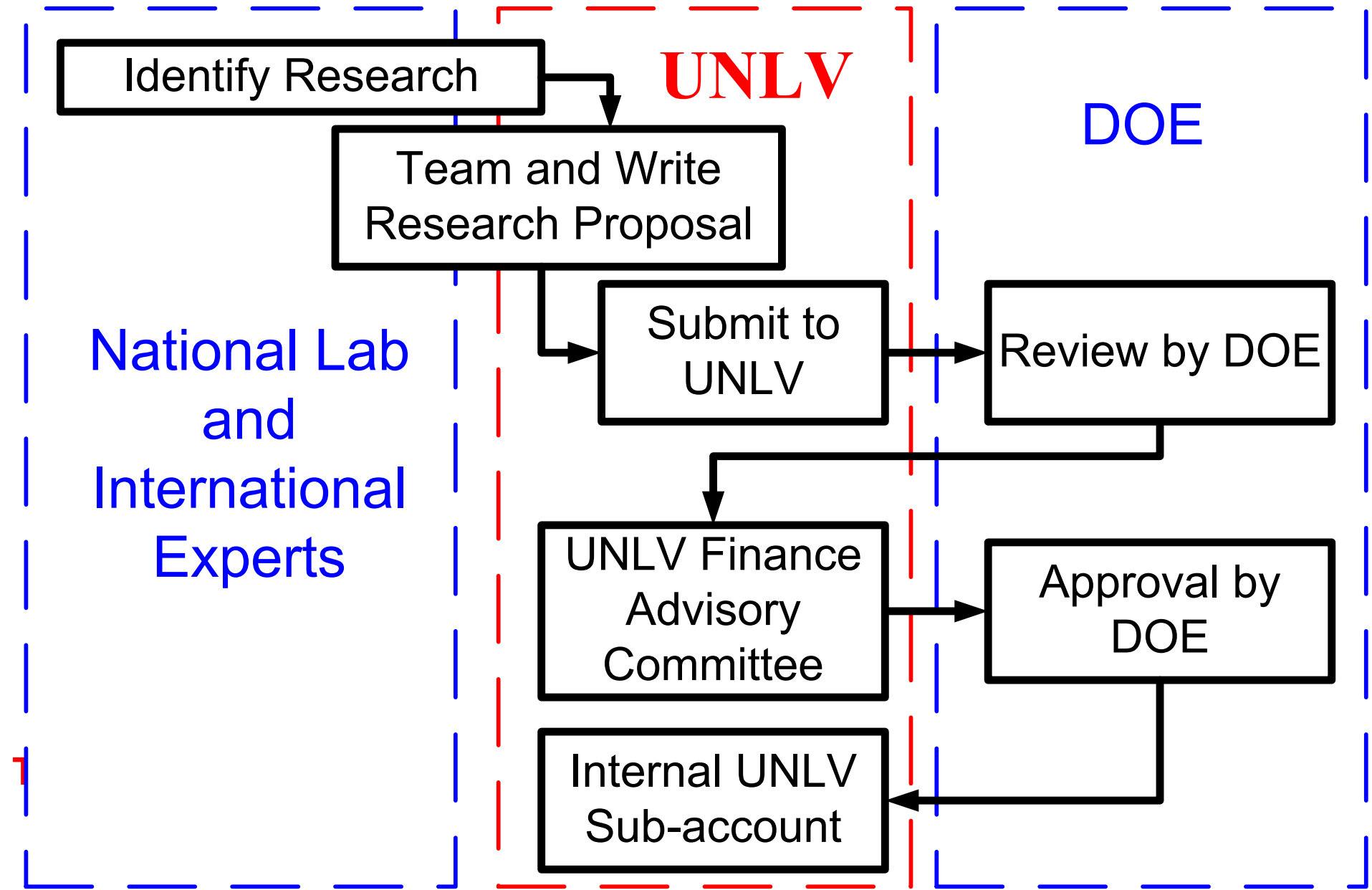
Program Components: International Collaboration

Student Research Proposal Process



UNLV Student Research Activities

- Task 1: Metallic Fuel Pins – ANL — Fuels
  Mechanical Engineering Dept. $141k (1 Grad)
- Task 2: Niobium Cavities – LANL — Accelerator
  Electrical and Computer Eng. Dept. $161k (2 Grads)
- Task 3: LBE Steel Corrosion – LANL — Transmuter
  Physics Department $190k (3 Grads)
- Task 4: Hydrogen Embrittlement – LANL — Transmuter
  Mechanical Engineering Dept. $142k (3 Grads)

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UNLV Student Research Activities

- Task 5: LBE Corrosion Modeling – LANL Transmuter
  Mechanical Engineering Dept. $110k (2 Grads)
- Task 6: Neutron Multiplicity Meas. – LANL Transmuter
  Harry Reid Center RDL/KRI $173k (2 Grads)
- Task 7: Dose Conversion Coefficients – ORNL/U's Transmuter
  Health Physics Department $160k (2 Grads)
- Task 8: Systems Engineering Model – ANL Separations
  Mechanical Engineering Dept. $150k (2 Grads)

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UNLV Student Research Activities

- Task 9: Processes for Fuel Fabrication – ANL — Fuels
  Mechanical Engineering Dept. $87k (2 Grads)
- Task 10: Deformation of Alloy EP-823 – LANL — Transmuter
  Mechanical Engineering Dept. $99k (2 Grads)
- Task 11: Nuclear Criticality Analyses – ANL — Separations
  Physics and Mechanical Engineering Depts. $110k (1 Grad)
- Task 12: Radiation Transport Modeling – ANL — Transmuter
  Mechanical Engineering Dept. $110k (2 Grads)

UNLV Student Research Activities

- Task 13: Sensing System for Oxygen in LBE – LANL Transmuter
  Electrical and Computer Engineering Dept. $146k (2 Grads)
- Task 14: $+ Annihilation Spectroscopy – LANL/ISU Transmuter
  Mechanical Engineering Dept. $120k (2 Grads)
- Task 15: Immobilization of Fission Iodine – ANL/KRI Separations
  Chemistry Department $178k (1 Grad)
  International Collaboration – KRI
- Task 16: Evaluation of Fluorapatite – ANL/KRI Separations
  Chemistry Department $179k (1 Grad)
  International Collaboration – KRI

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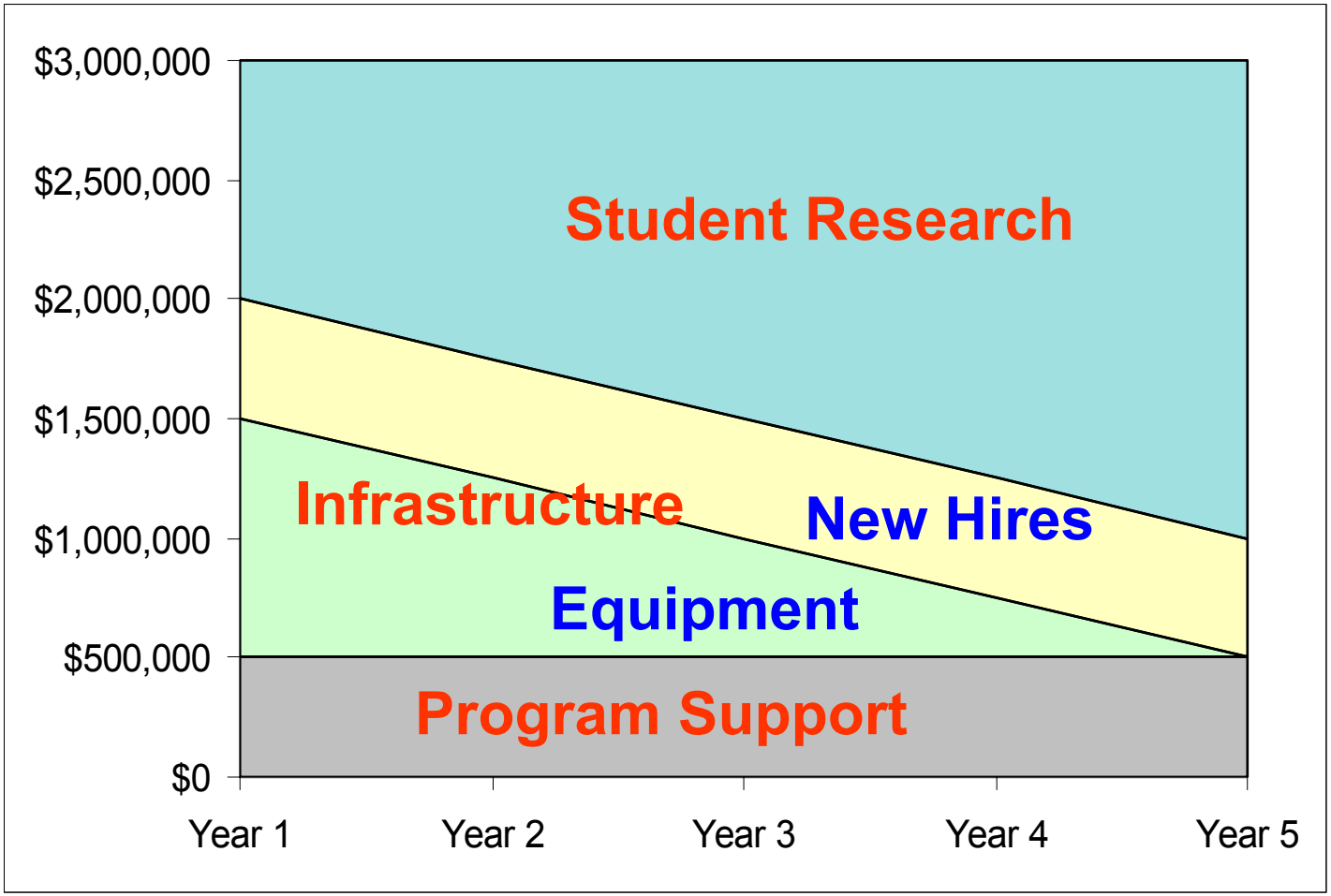
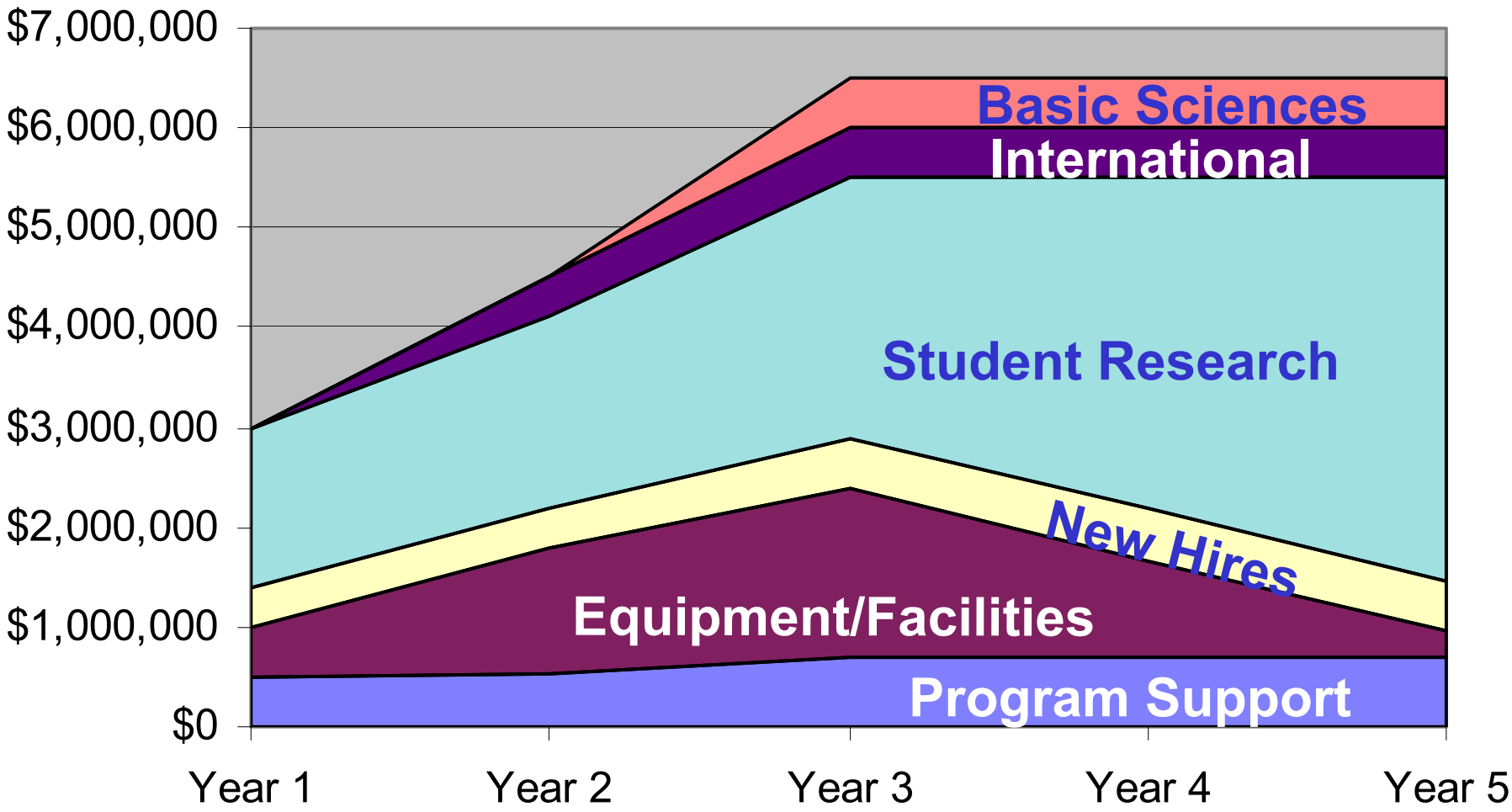
FY01 Schedule



FY02 Schedule



Plans for Year 3

- Student Research Program
  - 4 Additional Research Tasks
- International Collaborations
  - Collaborative Research – KRI (3 tasks)
  - LBE Support – IPPE (ISTC Contract)
  - Other (FZK, FZK-KALLA, RIT, SCK-CEN)
- Infrastructure Growth
  - 2003 Facilities
    - ISTC Target Complex Temporary Facility
    - Small LBE Experiments Facility
    - TEM and ICP-AES User Facilities
  - New Faculty Planned
    - Chemistry Joint Appointment
    - LBE Researcher and Technician
    - Reactor Physics Instructors
    - New Physics Professorships

Directions for Growth

- Program growth to $6.5 million annual support for Advanced Fuel Cycle Initiative
- New program funding of $4 million annual support for accelerator-driven systems missions
- Major new facilities: MPL (2002), TEM, ICP-AES and Small LBE (2003), and Large LBE lab (2004)
- 21 graduate assistantships in Year 1, 30 in Year 2, and 35 in Year 3 (about 80 total student/staff)
- New academic programs: Radiochemistry, Material Science and Engineering, and Nuclear Engineering
- New faculty: Nuclear Physics, LBE Coolant Technology, Nuclear Chemistry, Reactor Physics, more?

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